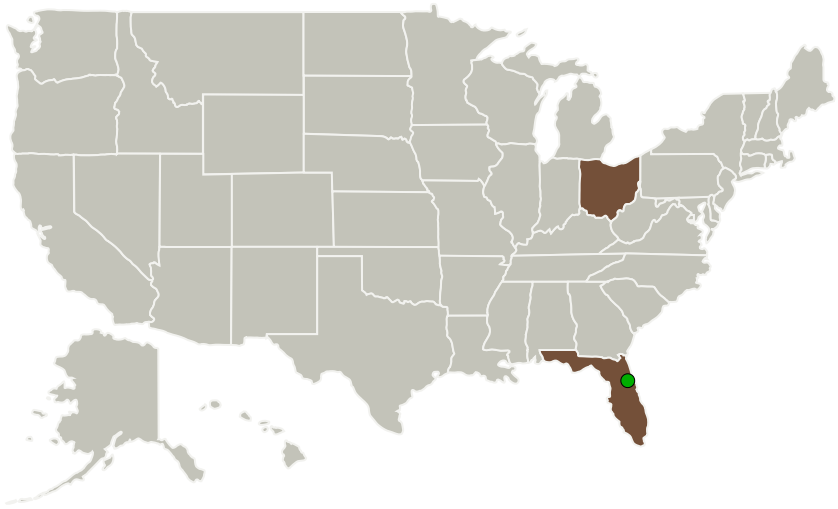
A CubeSat-Scale Testbed for Cryogenic Fluid Management Technologies, Phase I

Completed Technology Project (2011 - 2011)

Project Introduction

NASA has identified in-space cryogenic fluid management (CFM) as a high priority for technology development because the construction of an in-space propellant infrastructure is anticipated to dramatically decrease costs across a broad spectrum of missions. This importance is reflected in the designation of CFM as a Flagship Technology Demonstration Mission (FTD-2) as well as a mission at the level of Crosscutting Technologies (CRYOTE). Sierra Lobo proposes to develop a CFM testbed at the scale of an Edison Demonstration Mission (CryoCube) that would serve as a platform for a series of flight tests of many major CFM technologies. The missions will be designed to be conducted as stand-alone satellites, without reliance on propellant transfer from an upper stage, in order to provide the greatest possible flexibility for launch vehicle selection. Follow-up missions using dedicated small satellite launch vehicles could take advantage of the technology demonstrated during this SBIR program, and could be performed as funding becomes available instead of depending on the allocation in a large block.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Sierra Lobo Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	
Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida

Primary U.S. Work Locations	
Florida	Ohio

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137813)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Sierra Lobo Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

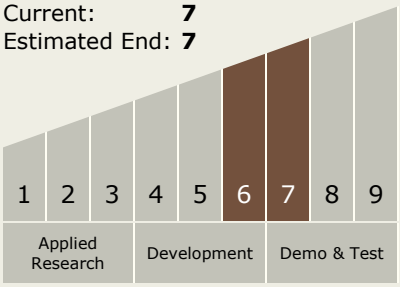
Carlos Torrez

Principal Investigator:

Mark S Haberbusch

Technology Maturity (TRL)

Start: **6**
Current: **7**
Estimated End: **7**



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Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.3 Cryogenic

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System